

REMARKS

Claims 1, 3, 7, and 9 have been amended. Claims 2, 4, 10, and 13 have been canceled. Claims 1, 3, 5-9, 11-12, and 14-15 remain pending in this application, with claims 1, 3, 7, and 9 being the only independent claim. Claims 1-4, 7-10, and 13 have been rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 3,638,491 (“Hart”). Claims 6, 12, and 15 have been rejected under 35 U.S.C. §103(a) as unpatentable over Hart in view of U.S. Patent 5,832,772 (“McEwan”). Claims 5, 11, and 14 have been rejected under 35 U.S.C. §103(a) as unpatentable over Hart in view of U.S. Patent 3,404,215 (“Burks”).

Rejection of claims 1-4, 7-10, and 13 under 35 U.S.C. §102(b)

The Office Action states that Hart teaches all of Applicant’s recited elements.

Independent claim 1 has been amended to recite a method for manufacturing an electronic circuit arrangement in a motor vehicle fuel tank. The method includes “arranging one or more electronic modules on a substrate; fixating said substrate with respect to a fuel tank wall; and soldering a cap to said substrate to form an encapsulated space, said one or more electronic modules being disposed in said encapsulated space and separated from any fuel or vapour outside said encapsulated space”. Support for the claim amendment can be found in original claim 2.

Hart fails to teach or suggest “soldering a cap to said substrate to form an encapsulated space, said one or more electronic modules being disposed in said encapsulated space and separated from any fuel or vapour outside said encapsulated space”, as recited in Applicant’s amended claim 1.

The Examiner cites col. 2, lines 12-15 of Hart and asserts that the pipe (13) and plug (16) of Hart teaches connecting to said substrate so as to form an encapsulated space that comprises said one or more electronic modules and is separated from any fuel or vapor outside said encapsulated space. Applicant disagrees.

Hart discloses a fuel-gauging device that includes concentric tubes that are adapted to be mounted within the fuel tank, and circuitry positioned within the inner tube and connected to an external gauge. The circuitry of Hart includes an oscillator to which direct current is supplied from a source such as a battery through a zener diode. The output of the oscillator of Hart is supplied to a capacitance bridge, one leg of which is formed by the concentric tubes. The output of the capacitance bridge of Hart is, in turn, supplied to an amplifier which includes oppositely disposed transistors connected in a manner to compensate for temperature changes in the transistor characteristics. The output of the amplifier of Hart is supplied through a voltage divider to the fuel-indicating meter. Hart also discloses that means are provided for metering the flow of fuel into and out of the space between the concentric tubes to provide for a damping action and thereby prevent undue fluttering or erratic action of the fuel-indicating meter (see abstract of Hart).

According to Hart, "Referring to FIGS. 1 and 2, the fuel-gauging device embodying the invention comprises a sensor (10) which is adapted to be supported by a mounting flange (11) within the fuel tank and connected by wires to a fuel gauge or indicator (12) on the instrument panel of the aircraft, boat or the like. As shown in FIG. 1, the sensor (10) comprises concentric aluminum tubes (13, 14). The fuel is adapted to rise between the tubes to vary the capacitance (shown schematically in broken lines in FIG. 3) between the tubes as presently described. Vent holes are provided at the upper end of the outer tube (140). The lower end of the inner tube is

closed by a plug (16) and the electronic circuit of the gauging device supported on a board (17) within the tube (13)”, (see col. 2, lines 1-15 of Hart).

The cited passages and Fig. 1 of Hart clearly disclose that one end of tube (13) is bolted to mounting flange (11) and the other end of tube (13) is sealed with a plug (16). Although, the arrangement of the tube (13), plug (16), and flange (11) of Hart encloses a board (17), Hart does not teach a cap soldered to a substrate to form an encapsulated space, as recited in Applicant’s claim 1.

The tube (13) of Hart is not a “cap”, and clearly has two open ends. Consequently, to close tube (13), the plug (16) is required to close the second opening. Further, the flange (11) of Hart is not a ceramic substrate, as recited in Applicant’s claims. Moreover, the tube (11) is bolted to flange (11) and not soldered, as recited in Applicant’s claim 1.

Therefore, Hart fails to teach or suggest, “soldering a cap to said substrate to form an encapsulated space, said one or more electronic modules being disposed in said encapsulated space and separated from any fuel or vapour outside said encapsulated space”, as recited in Applicant’s amended claim 1.

In contrast to Hart, according to Applicant’s invention, various electronic modules (20) are arranged on a ceramic substrate (22) made from ceramic or another suitable material. The cap (26) is soldered to the ceramic substrate (22) to create a fully tight encapsulation space where no carbohydrate fuel or vapour can enter from outside (see Fig. 2 and paragraphs [0014] and [0015] of Applicant’s specification).

In view of the foregoing, Applicants submit that Hart fails to teach or suggest the subject matter recited in Applicant’s amended independent claim 1. Accordingly, claim 1 is deemed to be patentable over Hart under 35 U.S.C. §102(b).

Claims 3, 7, and 9 have been amended to recite limitations similar to independent claim 1 and are, therefore, patentably distinct over Hart for at least those reasons discussed above with respect to claim 1.

Claims 2, 4, 10, and 13 have been canceled. Claim 8, which depends from independent claim 3, incorporates all of the limitations of independent claim 3 and is, therefore, deemed to be patentably distinct over Hart for at least those reasons discussed above with respect to independent claim 3.

Rejection of claims 6, 12, and 15 under 35 U.S.C. §103(a)

The Office Action states that the combination of Hart and McEwan teaches all of Applicant's recited elements.

Hart has been previously discussed and does not teach or suggest the subject matter recited in Applicant's independent claims 3, 7, and 9.

Because Hart does not teach or suggest the subject matter recited in Applicant's independent claims 3, 7, and 9, and because McEwan does not teach or suggest any elements of independent claim 1 that Hart is missing, the addition of McEwan to the reference combination fails to remedy the non-obviousness of the claims.

Claims 6, 12, and 15, which depend from independent claims 3, 7, and 9, incorporate all of the limitations of respective independent claim and are, therefore, deemed to be patentably distinct over Hart and McEwan for at least those reasons discussed above with respect to independent claims 3, 7, and 9.

Rejection of claims 5, 11, and 14 under 35 U.S.C. §103(a)

The Office Action states that the combination of Hart and Burks teaches all of Applicant's recited elements.

Hart has been previously discussed and does not teach or suggest the subject matter recited in Applicant's independent claim 1.

Because Hart does not teach or suggest the subject matter recited in Applicant's independent claim 1, and because Burks does not teach or suggest any elements of independent claim 1 that Hart is missing, the addition of Burks to the reference combination fails to remedy the non-obviousness of the claims.

Claims 5, 11, and 14, which depend from independent claims 3, 7, and 9, incorporate all of the limitations of respective independent claim and are, therefore, deemed to be patentably distinct over Hart and McEwan for at least those reasons discussed above with respect to independent claims 3, 7, and 9.

Conclusion


In view of the foregoing, reconsideration and withdrawal of all rejections, and allowance of all pending claims is respectfully solicited.

Should the Examiner have any comments, questions, suggestions, or objections, the Examiner is respectfully requested to telephone the undersigned in order to facilitate reaching a resolution of any outstanding issues.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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